

NAVAER 16-30URM75-503

Handbook  
Overhaul Instructions  
Generator, Sweep  
AN/URM-75

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## SECTION I

### DESCRIPTION AND LEADING PARTICULARS

#### 1-1. PURPOSE OF HANDBOOK.

1-2. This Handbook of Overhaul Instructions provides the information necessary for the inspection and overhaul of Generator, Sweep AN/URM-75.

#### 1-3. SCOPE OF HANDBOOK.

1-4. This handbook is intended to be used when overhaul-

ing Generator, Sweep AN/URM-75. For more detailed information of the equipment, refer to the Handbook of Service Instructions for Generator, Sweep AN/URM-75.

1-5. Information contained in the Handbook of Service Instructions is not repeated in this publication, except where required for clarity.

## SECTION II

### SPECIAL OVERHAUL TOOLS AND TEST EQUIPMENT

2-1. This section normally contains listings of special overhaul tools and test equipment which are required in addition to the usual general-purpose tools and test equipment

used during overhaul. However, no special overhaul tools or test equipment are required to perform the operations and tests on Generator, Sweep AN/URM-75 described in following sections.

## SECTION III

### SPECIALIZED MAINTENANCE AND REPAIR

#### 3-1. INTRODUCTION.

3-2. This section provides instructions for the removal and replacement of parts not generally handled by Field or FASRon activities. The procedures are designed to afford the quickest method of removal of a part from a component, or of replacing a part in a component. After the special part has been replaced, an appropriate performance check should be made.

3-3. The trouble-isolation procedures given in Sections V and VI of the Handbook of Service Instructions are sufficiently complete to isolate trouble to any defective part in the component; therefore, no additional trouble isolation procedures are given in this handbook.

#### 3-4. REPLACING BIAS POTENTIOMETER.

3-5. To replace the bias potentiometer, proceed as follows:

a. Remove the 12 knobs and five screws which hold front panel to chassis, and remove front panel.

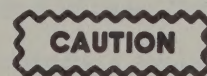
b. Tag and unsolder the three leads which are connected to potentiometer.

c. Remove bolt and washer which mounts potentiometer to chassis, and remove potentiometer.

d. Install new potentiometer, and perform steps a, b, and c in reverse sequence.

#### 3-6. REPAIRING SWEEP-MOTOR ASSEMBLY.

3-7. Should it become necessary to repair the sweep-motor assembly, because of failure of the motor or to shorting of the capacitor plates, the following procedure should be followed.



The sweep-motor assembly is a delicate precision assembly, and it is essential that the highest degree of skill be used in its reassembly. Failure to do so will cause irreparable damage to the sweep motor and necessitate using a new assembly.

To repair the sweep-motor assembly, proceed as follows:

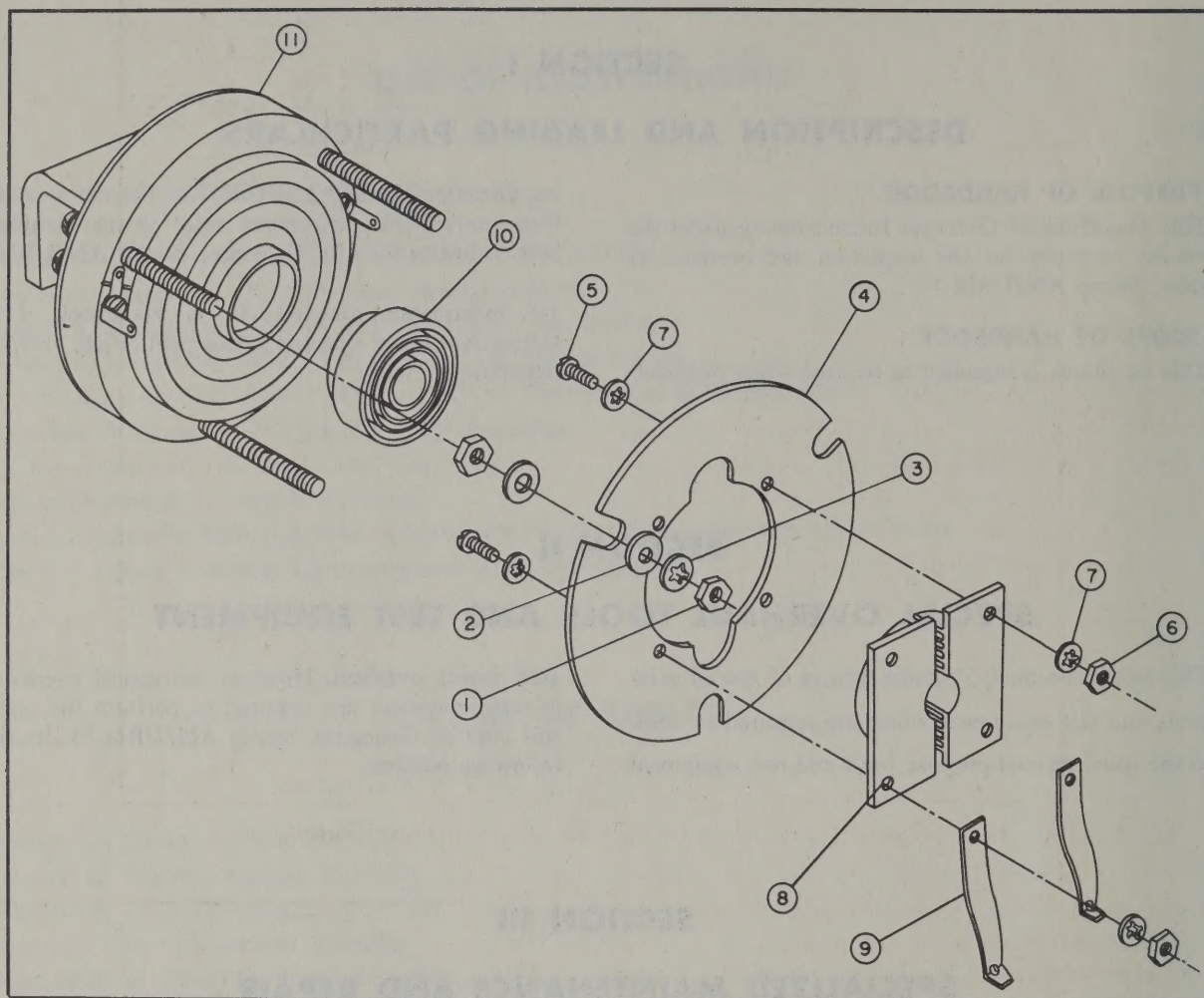


Figure 3-1. Sweep-Motor Assembly, Exploded View

a. Remove sweep-motor assembly from sweep-oscillator assembly in accordance with the procedure in paragraph 4-19.

b. Referring to figure 3-1, remove the three nuts (1), flat washers (2), and lock washers (3), which mount bakelite plate (4).

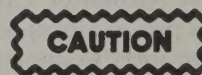
c. Remove the four screws (5) and nuts (6) and the eight lock washers (7) which secure the two stator plates (8) and the two connecting strips (9) to bakelite plate (4).

**Note**

If inspection discloses a defective or damaged rotor plate, the entire sweep motor must be discarded and replaced. The damaged rotor plate cannot be removed from the sweep motor without causing damage to the motor. If the sweep motor and rotor plates are not damaged, the following step should be ignored.

d. Place new sweep motor in position on a level surface, and glue new rotor into rotor cup on sweep motor, using

cement, MIL-C-8974. Allow a minimum drying time of 12 hours before proceeding with step e.



It is essential that the rotor be perfectly parallel with the rotor cup. Avoid using excess glue. If this operation has been performed incorrectly, and the glue has hardened, the sweep motor must be discarded.

e. Using a special stator mounting jig, fabricated locally in accordance with the details given in figure 3-2, assemble the stator plates to the bakelite plate. Figure 3-3 illustrates the use of the special stator mounting jig in aligning the plates of the stator, prior to assembly to the bakelite plate.

f. Reassemble the sweep-motor assembly by reversing the order used in disassembly in steps c and b. When the sweep-motor assembly is reassembled, measure the capacitance of

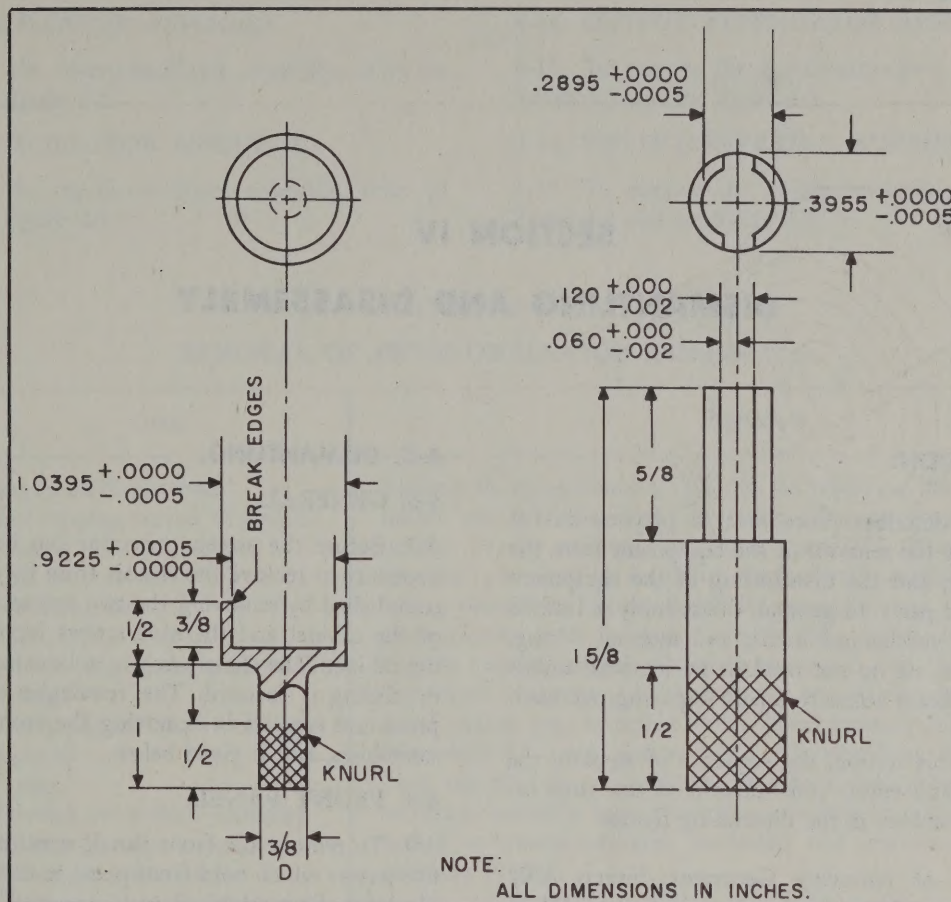


Figure 3-2. Stator Mounting Jig, Constructional Details

the sweep capacitor with an accurate capacitance measuring device. The measured capacitance should be  $8 \mu\text{f}$ . If this value is not obtained, readjust the position of the stator plate by adjusting the nuts which hold the bakelite stator mounting plate, until the capacitance is exactly  $8 \mu\text{f}$ . Tighten nuts securely, locking stator in this position.

g. Connect an ohmmeter across the two brass connecting strips, and operate the sweep motor by applying 6.3 volts, ac, to the motor. There should be no movement of the ohmmeter pointer. If the pointer moves, repeat steps e and f.

#### Note

If the sweep capacitor cannot be made to operate without shorting, it indicates that the rotor plate was assembled incorrectly in step d. Since the glue has hardened, the entire motor assembly must be discarded.

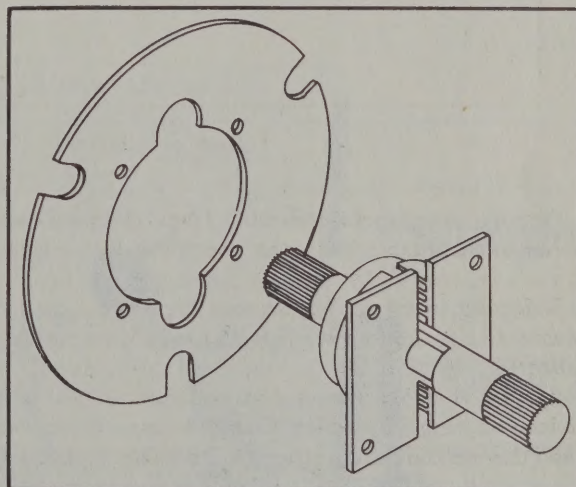


Figure 3-3. Method of Using Stator Mounting Jig

## SECTION IV

### DISMANTLING AND DISASSEMBLY

#### 4-1. INTRODUCTION.

4-2. This section describes procedures in preparation for overhaul, including the removal of the equipment from the shipping container, and the dismantling of the equipment into assemblies and parts. In general, disassembly is limited to the removal of mechanical items; and internal wiring, resistors, capacitors, etc do not need to be removed unless it is necessary to obtain access to a part requiring overhaul.

4-3. Throughout this section, the sequence of steps in the dismantling and disassembly procedures is in the same order as the index numbers in the illustrating figures.

4-4. The method of removing Generator, Sweep AN/URM-75, from its packing case is given in Section III of the Handbook of Service Instructions.

#### 4-5. DISMANTLING.

##### 4-6. GENERAL.

4-7. Before the sweep generator can be dismantled, it is necessary to remove the chassis from its cabinet. This is accomplished by removing the two screws located at the back of the cabinet and the nine screws located at the front of the cabinet. The chassis may now be removed from the case by sliding it forward. The remainder of the dismantling procedure consists in removing the front panel and major assemblies, and is given below.

##### 4-8. FRONT PANEL.

4-9. To remove the front panel, remove the 12 knobs and five screws which hold front panel to the chassis. Figure 4-1 identifies the mechanical parts removed in the dismantling process.

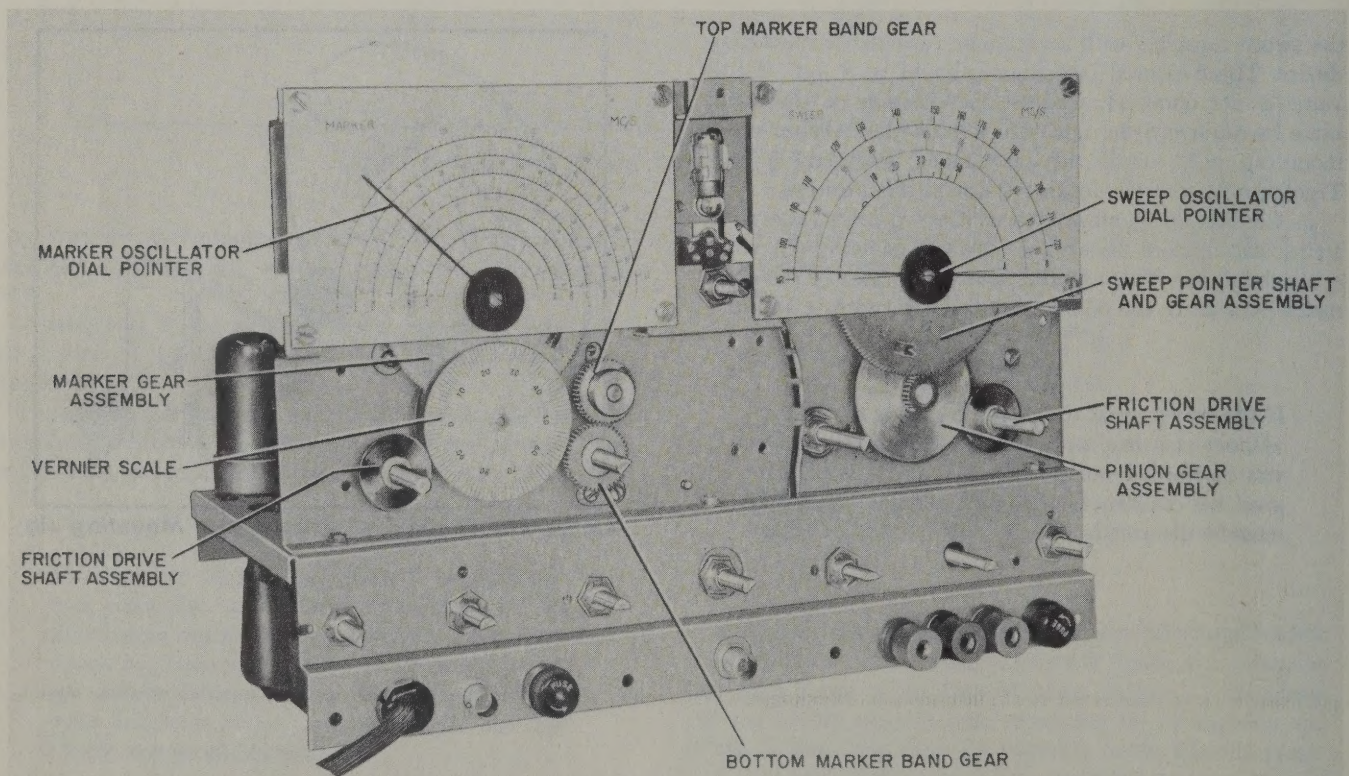


Figure 4-1. Generator, Sweep AN/URM-75, Front Panel Removed

## 4-10. SWEEP-OSCILLATOR ASSEMBLY.

4-11. To remove the sweep-oscillator assembly, refer to Table 4-1 and see figure 4-2.

## 4-12. MARKER-OSCILLATOR ASSEMBLY.

4-13. To remove the marker-oscillator assembly, refer to Table 4-2 and see figure 4-2.

## 4-14. OUTPUT-ATTENUATOR ASSEMBLY.

4-15. To remove the output-attenuator assembly, refer to Table 4-3 and see figure 4-3.

## 4-16. SWEEP-CONVERTER ASSEMBLY.

4-17. To remove the sweep-converter assembly, refer to Table 4-4 and see figure 4-3.

TABLE 4-1  
REMOVAL OF SWEEP-OSCILLATOR ASSEMBLY

| Index No. | Item                                  | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Sweep-oscillator shield               | Remove sweep-oscillator shield (1) by removing the 14 self-tapping screws which secure shield to chassis. Remove sweep-oscillator dial pointer (4) by removing mounting screw (5). Remove sweep-oscillator dial plate (6) by removing the four self-tapping screws (7) and lifting plate from chassis. Carefully pry out E ring (8) from rear of sweep-pointer shaft and gear assembly (9), and lift assembly out with a slight twisting motion. Carefully pry out E ring (10) from friction drive-shaft assembly (11). Loosen the two Allen screws (12) in collar of pinion gear assembly (13), simultaneously lifting out friction drive-shaft (11) and pinion gear (13) assemblies. Remove the three front and the two rear self-tapping screws (14) which secure sweep-oscillator assembly to chassis. Tag and unsolder the five leads connected to sweep-oscillator assembly, and remove sweep-oscillator assembly (15). |
| 2         | Self-tapping screws (14 used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3         | Chassis                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4         | Dial pointer                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 5         | Mounting screw                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 6         | Dial plate                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 7         | Self-tapping screws (four used)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8         | E ring                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 9         | Sweep-pointer shaft and gear assembly |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 10        | E ring                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 11        | Friction drive shaft assembly         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 12        | Allen screws (two used)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 13        | Pinion gear assembly                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 14        | Self-tapping screws (five used)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 15        | Sweep-oscillator assembly             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

TABLE 4-2  
REMOVAL OF MARKER-OSCILLATOR ASSEMBLY

| Index No. | Item                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16        | Marker-oscillator shield        | Remove marker-oscillator shield (16) by removing the 16 self-tapping screws (17) which secure shield to chassis. Remove marker-oscillator dial pointer (18) by removing mounting screw (19). Remove marker-oscillator dial plate (20) by removing the four self-tapping screws (21) and lifting plate from chassis. Loosen the two Allen screws (22) in collar of vernier scale (23), and lift scale from chassis. Loosen the two Allen screws (24) in marker gear assembly (25), and lift gear assembly from chassis. Remove E ring (26) from friction drive shaft (27) and remove E ring (28) from pinion gear assembly, (29) and simultaneously lift both assemblies away from chassis. Remove top marker band gear (30) by loosening the two Allen screws (31) on gear collar and lifting collar from chassis. |
| 17        | Self-tapping screws (16 used)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 18        | Marker-oscillator dial pointer  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 19        | Mounting screw                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 20        | Marker-oscillator dial plate    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 21        | Self-tapping screws (four used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 22        | Allen screws (two used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 23        | Vernier scale                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 24        | Allen screws (two used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 25        | Marker gear assembly            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 26        | E ring                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 27        | Friction drive shaft            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 28        | E ring                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 29        | Pinion gear assembly            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 30        | Top marker band gear            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 31        | Allen screws (two used)         | <p>Note</p> <p>Bottom marker band gear (32) may remain attached to chassis.</p> <p>Remove the four self-tapping screws (33) which mount assembly. Tag and unsolder the two leads, and remove marker-oscillator assembly (34) from chassis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 32        | Bottom marker band gear         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 33        | Self-tapping screws (four used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 34        | Marker-oscillator assembly      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

TABLE 4-3  
REMOVAL OF OUTPUT-ATTENUATOR ASSEMBLY

| Index No. | Item                             | Procedure                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Self-tapping screws (two used)   | Remove the two screws (1) which secure retaining plates (2), and remove top grounding plate (3) from output-attenuator assembly (4) and sweep-converter assembly (5). Remove the three self-tapping screws (6) which secure output-attenuator assembly to chassis. Tag and unsolder the eight leads connected to output-attenuator assembly. Carefully slide assembly to rear and lift from chassis. |
| 2         | Retaining plates (two used)      |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3         | Top grounding plate              |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4         | Output-attenuator assembly       |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5         | Sweep-converter assembly         |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6         | Self-tapping screws (three used) |                                                                                                                                                                                                                                                                                                                                                                                                      |

TABLE 4-4  
REMOVAL OF SWEEP-CONVERTER ASSEMBLY

| Index No. | Item                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Self-tapping screws (two used)  | <p>Remove the two self-tapping screws (1) which secure retaining plate (2), and remove top grounding plate (3) from sweep-converter assembly (5) and output-attenuator assembly (4). Remove the five self-tapping screws (7) which secure sweep-converter assembly to top of chassis. Unsolder shielded lead going to output-attenuator assembly. Tag and unsolder the six wires which enter sweep converter at chassis end.</p> <p style="text-align: center;"><b>Note</b></p> <p>If sweep oscillator shield was not removed, it must be removed to unsolder leads.</p> <div style="text-align: center; border: 2px solid black; padding: 5px; width: fit-content; margin: 10px auto;"><b>CAUTION</b></div> <p>Leave wires attached to switch terminals in the sweep-converter assembly.</p> <p>Unsolder copper ribbon going to sweep-oscillator assembly.</p> <p>Carefully slide sweep-converter assembly to the rear, and remove from chassis.</p> |
| 2         | Retaining plates (two used)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3         | Top grounding plate             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4         | Output-attenuator assembly      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5         | Sweep-converter assembly        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 7         | Self-tapping screws (five used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**4-18. DISASSEMBLY.**

**4-19. SWEEP-OSCILLATOR ASSEMBLY.**

4-20. To disassemble the sweep-oscillator assembly, refer to Table 4-5 and see figure 4-2.

**4-21. MARKER-OSCILLATOR ASSEMBLY.**

4-22. To disassemble the marker-oscillator assembly, refer to Table 4-6 and see figure 4-2.

TABLE 4-5  
DISASSEMBLY OF SWEEP-OSCILLATOR ASSEMBLY

| Index No. | Item                               | Procedure                                                                                                                                                                                                                                                                                                                 |
|-----------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35        | Brass connecting straps (two used) | Unsolder brass connecting straps (35) and wires (36) attached to sweep motor (37). Remove the two hex-head screws (38) and lock-washers (39) which secure sweep motor (37) to sweep bracket assembly (40). Carefully lift sweep motor (37) away from sweep bracket assembly (40). Remove the two hex-head screws (41) and |
| 36        | Wires (two used)                   |                                                                                                                                                                                                                                                                                                                           |
| 37        | Sweep motor                        |                                                                                                                                                                                                                                                                                                                           |
| 38        | Hex-head screws (two used)         |                                                                                                                                                                                                                                                                                                                           |



TABLE 4-3  
REMOVAL OF OUTPUT-ATTENUATOR ASSEMBLY

| Index No. | Item                             | Procedure                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Self-tapping screws (two used)   | Remove the two screws (1) which secure retaining plates (2), and remove top grounding plate (3) from output-attenuator assembly (4) and sweep-converter assembly (5). Remove the three self-tapping screws (6) which secure output-attenuator assembly to chassis. Tag and unsolder the eight leads connected to output-attenuator assembly. Carefully slide assembly to rear and lift from chassis. |
| 2         | Retaining plates (two used)      |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3         | Top grounding plate              |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4         | Output-attenuator assembly       |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5         | Sweep-converter assembly         |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6         | Self-tapping screws (three used) |                                                                                                                                                                                                                                                                                                                                                                                                      |

TABLE 4-4  
REMOVAL OF SWEEP-CONVERTER ASSEMBLY

| Index No. | Item                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Self-tapping screws (two used)  | Remove the two self-tapping screws (1) which secure retaining plate (2), and remove top grounding plate (3) from sweep-converter assembly (5) and output-attenuator assembly (4). Remove the five self-tapping screws (7) which secure sweep-converter assembly to top of chassis. Unsolder shielded lead going to output-attenuator assembly. Tag and unsolder the six wires which enter sweep converter at chassis end. |
| 2         | Retaining plates (two used)     |                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 3         | Top grounding plate             |                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4         | Output-attenuator assembly      |                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5         | Sweep-converter assembly        |                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 7         | Self-tapping screws (five used) | <p><b>Note</b></p> <p>If sweep oscillator shield was not removed, it must be removed to unsolder leads.</p> <p><b>CAUTION</b></p> <p>Leave wires attached to switch terminals in the sweep-converter assembly.</p> <p>Unsolder copper ribbon going to sweep-oscillator assembly.</p> <p>Carefully slide sweep-converter assembly to the rear, and remove from chassis.</p>                                                |
|           |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |

4-18. DISASSEMBLY.

4-19. SWEEP-OSCILLATOR ASSEMBLY.

4-20. To disassemble the sweep-oscillator assembly, refer to Table 4-5 and see figure 4-2.

4-21. MARKER-OSCILLATOR ASSEMBLY.

4-22. To disassemble the marker-oscillator assembly, refer to Table 4-6 and see figure 4-2.

TABLE 4-5  
DISASSEMBLY OF SWEEP-OSCILLATOR ASSEMBLY

| Index No. | Item                               | Procedure                                                                                                                                                                                                                                                                                                                 |
|-----------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35        | Brass connecting straps (two used) | Unsolder brass connecting straps (35) and wires (36) attached to sweep motor (37). Remove the two hex-head screws (38) and lock-washers (39) which secure sweep motor (37) to sweep bracket assembly (40). Carefully lift sweep motor (37) away from sweep bracket assembly (40). Remove the two hex-head screws (41) and |
| 36        | Wires (two used)                   |                                                                                                                                                                                                                                                                                                                           |
| 37        | Sweep motor                        |                                                                                                                                                                                                                                                                                                                           |
| 38        | Hex-head screws (two used)         |                                                                                                                                                                                                                                                                                                                           |

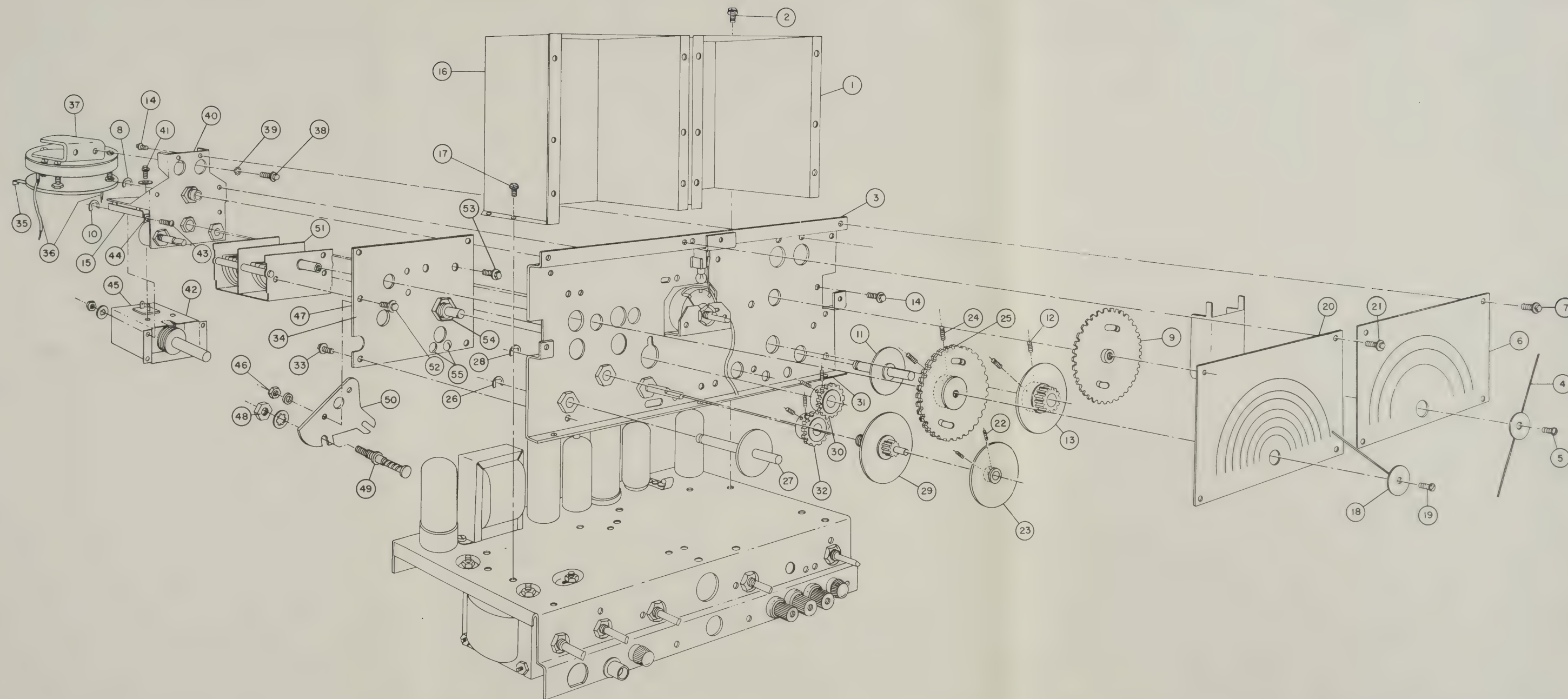


Figure 4-2. Generator, Sweep AN/URM-75, Exploded View, Top Section



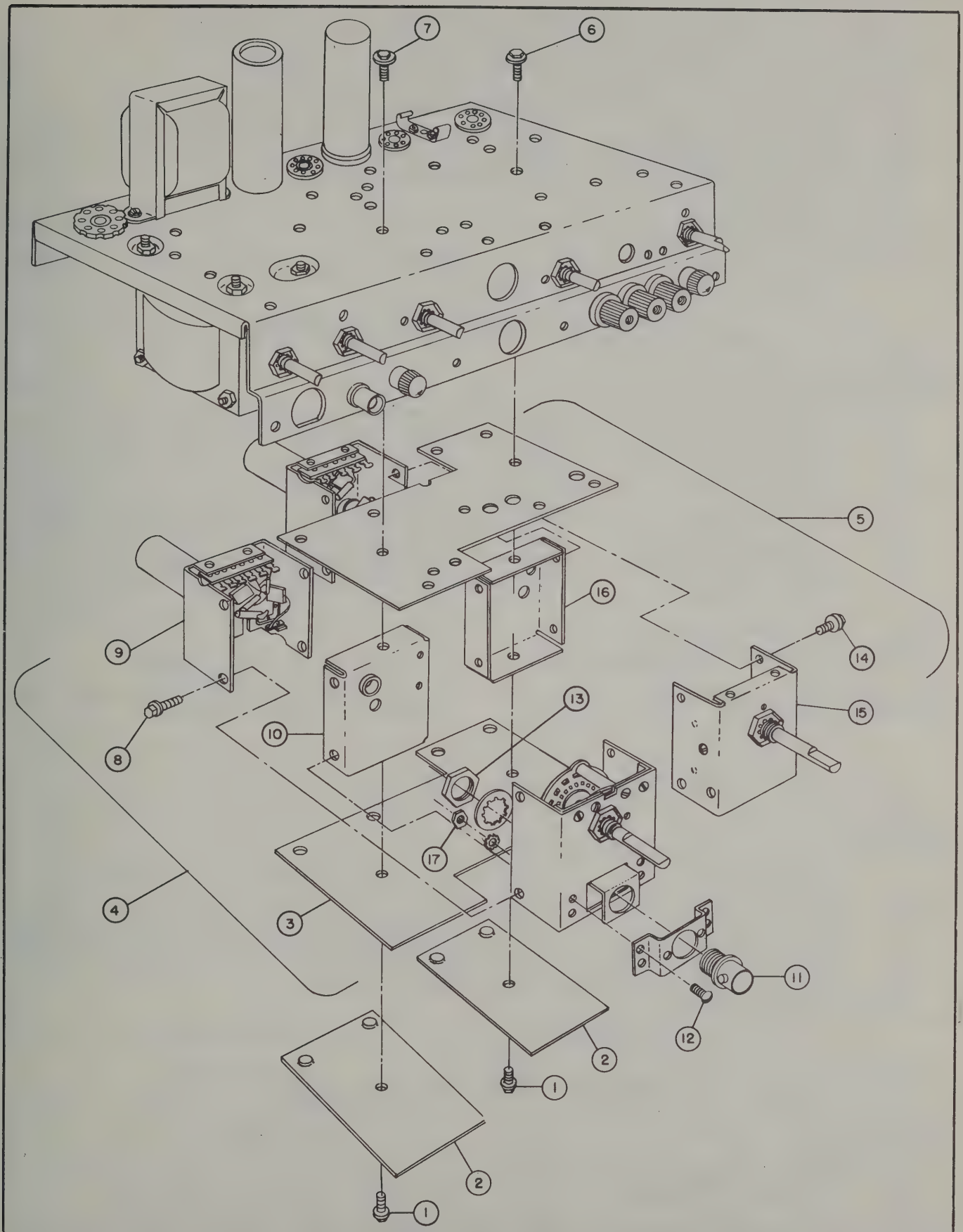


Figure 4-3. Generator, Sweep AN/URM-75, Exploded View, Bottom Section

TABLE 4-5 (Continued)

| Index No. | Item                       | Procedure                                                                                                                                                                                                                                 |
|-----------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39        | Lockwashers (two used)     | lockwashers at top of inductance tuner (42) and remove the two screws (43) from tuner supports (44). Unsolder leads from capacitors attached to inductance tuner insulating block (45), and carefully lift out inductance tuner assembly. |
| 40        | Sweep bracket assembly     |                                                                                                                                                                                                                                           |
| 41        | Hex-head screws (two used) |                                                                                                                                                                                                                                           |
| 42        | Inductance tuner           |                                                                                                                                                                                                                                           |
| 43        | Screws (two used)          |                                                                                                                                                                                                                                           |
| 44        | Tuner supports             |                                                                                                                                                                                                                                           |
| 45        | Insulating block           |                                                                                                                                                                                                                                           |

TABLE 4-6

DISASSEMBLY OF MARKER-OSCILLATOR ASSEMBLY

| Index No. | Item                       | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46        | Nuts (two used)            | Remove the two nuts (46) from switch pillar supports (47). Remove nuts and lockwashers (48) which mount oscillator coils (49) to coil plate (50), and remove coil plate from assembly. Unsolder the two wires from bottom of variable capacitor (51), and the two ground connections from top of capacitor. Remove the two hex-head screws (52) from front of chassis, and lift variable capacitor away from assembly. Remove the two screws (55) which hold padder mounting bracket to front of chassis. Remove the two screws and nuts (53) and the nut (54) on front of switch shaft, and remove marker-tube bracket. |
| 47        | Switch pillar supports     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 48        | Lockwashers (two used)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 49        | Marker-oscillator coil     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 50        | Coil plate                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 51        | Variable capacitor         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 52        | Hex-head screws (two used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 53        | Screws and nuts (two used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 54        | Nut                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 55        | Screws (two used)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

4-23. OUTPUT-ATTENUATOR ASSEMBLY.

4-25. SWEEP-CONVERTER ASSEMBLY.

4-24. To disassemble the output-attenuator assembly, refer to Table 4-7 and see figure 4-3.

4-26. To disassemble the sweep-converter assembly, refer to Table 4-8 and see figure 4-3.

TABLE 4-7

DISASSEMBLY OF OUTPUT-ATTENUATOR ASSEMBLY

| Index No. | Item                          | Procedure                                                                                                                                                                                                                                                                                                                                                              |
|-----------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8         | Screws (four used)            | Remove the four screws (8) from sides of output-attenuator shield box (9). Unfold shield box and unsolder copper ribbon which connects switch section of box with tube section. Remove center partition (10). Remove coaxial cable connector (11) by unsoldering lead and removing round-head screws (12) and nut and lockwasher (17). Remove nut and lockwasher (13). |
| 9         | Output-attenuator shield box  |                                                                                                                                                                                                                                                                                                                                                                        |
| 10        | Center partition              |                                                                                                                                                                                                                                                                                                                                                                        |
| 11        | Coaxial cable connector       |                                                                                                                                                                                                                                                                                                                                                                        |
| 12        | Round-head screws (four used) |                                                                                                                                                                                                                                                                                                                                                                        |
| 13        | Nut and lockwasher            |                                                                                                                                                                                                                                                                                                                                                                        |
| 17        | Nut and lockwasher            |                                                                                                                                                                                                                                                                                                                                                                        |

TABLE 4-8

DISASSEMBLY OF SWEEP-CONVERTER ASSEMBLY

| Index No. | Item                       | Procedure                                                                                                                                                                                                         |
|-----------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14        | Screws (four used)         | Remove the four screws (14) from sides of sweep-converter shield box (15). Unfold shield box and unsolder wire and capacitor which connect switch section of box with tube section. Remove center partition (16). |
| 15        | Sweep-converter shield box |                                                                                                                                                                                                                   |
| 16        | Center partition           |                                                                                                                                                                                                                   |

**SECTION V****CLEANING****5-1. INTRODUCTION.**

5-2. This section presents an outline of procedures for cleaning the dismantled and disassembled components, assemblies, and parts of Generator, Sweep AN/URM-75.

5-3. Parts containing electrical wiring are treated separately from those containing mechanical items. All parts requiring methods of cleaning peculiar to, or specifically prescribed for, them are afforded separate treatment. Parts of such similar construction as to permit identical cleaning procedures are grouped under a common heading, whenever possible.

5-4. Due consideration is given to the cleaning of finished surfaces, in order to permit immediate repairs of minor damage by brush touch-up.

5-5. Reference in this section to the word solvent shall be understood as indicating a mixture comprised of methylene chloride, 25 percent; perchlorethylene, 5 percent; and solvent, Federal Spec P-S-661, 70 percent by volume. Other identified cleaning agent references are accompanied with pertinent warnings or cautions. All referenced cleaning and protective agents are listed and identified in Table 5-1.

**WARNING**

Perform operations involving solvent under a ventilated hood. Avoid breathing solvent vapor; wear a suitable mask when necessary; also avoid continuous contact with solvent. Use gloves, goggles, and apron to prevent irritation resulting from prolonged contact. Change clothing that has become saturated with solvent.

5-6. References to air jet or to compressed air in Section V signify a hand-operated air nozzle supplied with clean, dry, compressed air at a pressure of 15 to 18 psi, maximum, unless otherwise stated.

**WARNING**

Goggles should be worn when using air jet to blow dust and dirt from equipment. Warn personnel away from hazardous area or working enclosure.

**5-7. SIMILAR PARTS.**

5-8. Small metal parts such as shields, dust covers, brackets, clamps, etc should be cleaned as follows:

- a. Blow away loose dust and dirt with air jet.
- b. Go over all surfaces with a clean lintless cloth moistened with clean solvent.
- c. If necessary, submerge part in solvent tank, and brush with a nonmetallic brush.
- d. Allow to drain and dry thoroughly.
- e. Touch-up any minor damage to finish.

**5-9. MACHINED METAL PARTS.**

5-10. Gears, shafts, bearings, and other machined mechanical parts should be cleaned in a suitable cleaning machine, if available; otherwise, clean these parts as follows:

- a. Remove bulk of grease with rags.
- b. Submerge part in solvent tank, and brush clean with a nonmetallic brush.
- c. Allow to drain and dry thoroughly.

**CAUTION**

To avoid rust, metal parts with machined or unfinished surfaces should not be contacted with bare hands after cleaning.

- d. Apply light coating of MIL-L-644 lubricating oil to all unfinished surfaces immediately after drying.

**5-11. MECHANICAL PARTS, ALL OR PARTLY FINISHED.**

5-12. To clean mechanical parts, such as brackets, hinges, etc, proceed as follows:

- a. Blow away dust and dirt with air jet.
- b. Submerge part in solvent tank, and brush all holes, recesses, and surfaces with a nonmetallic brush.
- c. Allow to drain and dry.
- d. Make touch-up repairs to all minor damage to finish.

**5-13. NONMETALLIC PARTS.**

5-14. To clean rubber shock mounts, composition terminal boards, insulators, and other similar parts, proceed as follows:

- a. Wipe away any grease spots with a clean cloth.
- b. Submerge part in bath of warm water containing two ounces of laundry detergent per gallon, and wash clean with cloth.
- c. Rinse well in clean warm water.
- d. Dry with air jet.

TABLE 5-1  
CLEANING MATERIALS AND PROTECTIVE AGENTS

| Material                                                                                                                                                                                 | Specification                                                                                 | ASO Stock No.                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------|
| Solvent; a mixture by volume of:<br>Methylene Chloride, 25%<br>Perchloroethylene, 5%<br>Standard Solvent, 70%*<br>Trichloroethylene<br>Oil, lubricating, light, low volatility<br>Grease | MIL-M-6998<br>Fed. Spec O-T-236<br>Fed. Spec P-S-661<br>AN-O-R-631<br>MIL-L-644<br>MIL-G-3278 | R51T4459-200<br>R51C1326-75<br>R51R5780 |

\* This solvent should not be used on polystyrene or teflon parts.

#### 5-15. ELECTRON TUBES.

5-16. Electron tubes should be cleaned in the following manner:

- Wipe envelope lightly, using clean cloth lightly moistened in solvent; avoid erasure of tube type marking.
- Wipe tube pins lightly with clean cloth slightly moistened with trichloroethylene. Avoid bending pins on miniature type tubes.

#### 5-17. ELECTRICAL CONTACTS AND SWITCHES.

5-18. To clean tube sockets, switches, contacts, and similar parts, proceed as follows:

- Blow away dust and dirt with light applications of air jet.
- Wash all contacts with a light application of trichloroethylene, applied with a soft-hair brush. Repeat application until contacts appear clean.
- Dry thoroughly, using the air jet lightly.

#### 5-19. CHASSIS, WIRED.

5-20. Wired chassis, containing capacitors, resistors, assemblies, subassemblies, etc, are cleaned for inspection as follows:

- Clean all surfaces, parts, and wiring with a soft-haired brush in conjunction with air jet.



Blasting small coils, leads, and other delicate parts by too close an approach with the air jet should be avoided. Caution should be observed when using brushes on delicate parts.

#### Note

When necessary to disturb dress of wiring and cables, their dressing should be noted and restored to proper position immediately upon completion of cleaning.

- Clean all fuse holders as directed in paragraph 5-13.
- Clean all tube sockets as directed in paragraph 5-18.
- Clean all connectors and inserts as directed in paragraph 5-18.
- Clean all glass and ceramic insulators as directed in paragraph 5-14.
- Clean all switches and contacts as directed in paragraph 5-18.
- Complete by wiping down all finished surfaces with a clean lintless cloth moistened with solvent.
- Allow to drain and dry thoroughly.
- Make touch-up repairs on minor damage to finish.

## SECTION VI

### INSPECTION

#### 6-1. INTRODUCTION.

6-2. This section contains directive procedures of inspection for defects resulting from damage, wear, or deterioration of the dismantled, disassembled, and cleaned assemblies and parts of Generator, Sweep AN/URM-75.

6-3. To facilitate their inspection, all parts are classified in this section either as mechanical, or as electrical or electronic. The parts are then considered alphabetically, in their respective classes, for easy reference.

6-4. Figure 6-1 shows the underside view of the component and indicates pertinent points of inspection.

6-5. Presentations of inspection procedures are made in tabular form in some instances, in the interest of clarity.

#### 6-6. MECHANICAL PARTS.

##### 6-7. CASTINGS.

6-8. Inspect castings for cracks or breaks, and for marred or damaged machined surfaces, holes, counterbores, or threads. Determine if finish is damaged beyond practical touch-up repairs, or requires work in the finishing department.

##### 6-9. CONNECTOR BODIES.

6-10. Inspect these for broken or deformed shell, clamp, nut, adapter, or ferrule, for damage to threads of nut or other parts, for broken or missing insert retainers, and for missing screws.

##### 6-11. COVERS: DUST OR SAFETY.

6-12. Inspect covers for deformation, punctures, open seams, deep dents, and badly worn surfaces. Also check for damaged fastener devices or handles, damaged threads in holes of tapping strips, etc, and broken spot welds. Inspect for corrosion and damage to finish requiring work in the finishing department.

##### 6-13. COVERS: PERFORATED.

6-14. Inspect these covers as directed in paragraph 6-11.

##### 6-15. GASKETS: METAL.

6-16. Inspect these gaskets for deformation and damage (crushed, torn, or twisted out of shape), and for oxidation or presence of imbedded matter.

##### 6-17. GASKETS AND SEALS: RUBBER OR COMPOSITION.

6-18. Inspect these gaskets for deformation and damage (tears, creases, folds, or elongation), rough surfaces, imbedded foreign matter (particularly metal particles), and loss of resiliency.

##### 6-19. GEARS.

6-20. Inspect gears for broken, chipped, or severely worn teeth; cracked or deformed bodies; worn bore; missing, damaged, or improperly secured hubs; friction; and for stickiness of action.

#### Note

Wear of teeth, except in instances where it is sufficiently severe to be apparent on visual inspection, is best determined by measurement when the gears are assembled in their train. Presence of a burr on one side of gear at the edges of the teeth, and extending over some portion less than half the circumference, is an indication of wear of the teeth. This form of wear is usually caused by improper alignment of gear, but can also result from a badly worn bore causing the misalignment.

##### 6-21. MACHINED PARTS.

6-22. Inspect machined parts as follows:

a. Make over-all check of surfaces, holes, bores, counterbores, slots, grooves, shoulders, flanges, keyways, teeth, tapped holes, and all threaded members, both male and female, for physical damage of any sort, including roughness of surface, corrosion, or presence of foreign matter.

b. Examine plated or finished areas for damage requiring replating or refinishing beyond touch-up repair.

##### 6-23. UNMACHINED PARTS.

6-24. Inspect unmachined mechanical parts for physical damage and deformation, and for corrosion. Check for damage to the plating or finish that would require more than touch-up repair.

##### 6-25. MOUNTS: VIBRATION.

6-26. Inspect vibration mounts as follows:

a. Check metal parts for corrosion and deformation.

b. Examine the rubber or composition parts for deep cracks, loss of elasticity, or any other physical damage.

##### 6-27. SHIELDS: ELECTRON TUBE.

6-28. Inspect all tube shields for marred finish, damage to or deformation of shell, including locking grooves, and damaged or missing tube spring.

#### 6-29. ELECTRICAL OR ELECTRONIC PARTS.

##### 6-30. CABLES.

6-31. Inspect cables as follows:

a. Inspect for physical damage to outer surfaces, lacings, or flexible plastic conduit.

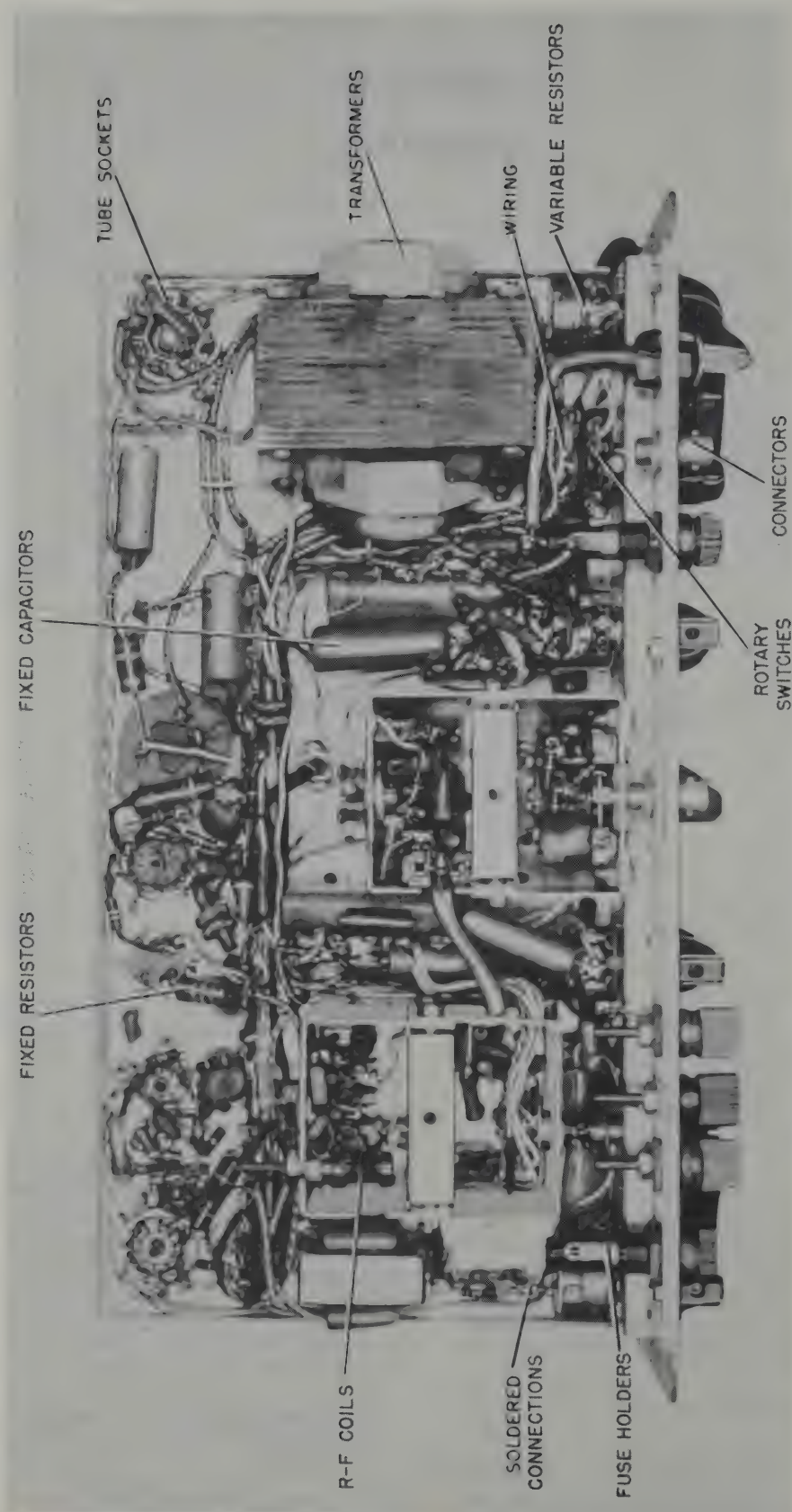


Figure 6-1. Generator, Sweep AN/URM-75, Underside View, Showing Points of Inspection

TABLE 6-1  
INSPECTION OF FIXED CAPACITORS

| Defects                                                      | Metal Cased,<br>Glass or Ceramic<br>Terminal<br>Insulation | Metal Cased,<br>Other Terminal<br>Insulation | Molded<br>Type | Ceramic<br>Type |
|--------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------|----------------|-----------------|
| Oil leakage                                                  | X                                                          | X                                            |                |                 |
| Cracked or broken insulation                                 | X                                                          |                                              |                |                 |
| Charred or melted insulation                                 |                                                            | X                                            |                |                 |
| Case damage (dents or holes)                                 | X                                                          | X                                            |                |                 |
| Case damage (cracks or breakage)                             |                                                            |                                              | X              |                 |
| Body damage (cracks or breakage)                             |                                                            |                                              |                | X               |
| Loose, broken, or corroded terminal studs,<br>lugs, or leads | X                                                          | X                                            | X              | X               |
| Loose, broken, or poorly soldered terminal<br>connections    | X                                                          | X                                            | X              | X               |
| Loose mountings                                              | X                                                          | X                                            | X              | X               |

b. Examine for loose lacing, terminations, clamps, supports, and mountings.

c. Check to see whether conduit is separated from connector.

d. Check for broken or missing safety wire.

e. Inspect for defective connector bodies and inserts, as directed in paragraphs 6-9 and 6-44, respectively.

f. Inspect for defective soldered connections, as outlined in paragraph 6-64 (soldered terminal connections).

g. Look for damaged or missing markers.

h. Test for lack of continuity, shorted conductors, grounds between conductors and connector bodies or cable shields. There should be continuity between cable shields and connector shells. A conventional point-to-point continuity test is suggested as the means of locating electrical defects.

#### 6-32. CAPACITORS: FIXED.

6-33. Inspect all fixed capacitors for defects as noted in Table 6-1.

#### 6-34. CAPACITOR: VARIABLE.

6-35. Inspect adjustable slug type, or air-dielectric, variable capacitor as follows:

a. Check adjustable slug for freedom of movement, and connection to adjusting screw.

b. Check for crushed, cracked, or broken case, and physical damage to tuning-slug adjustment screws and locking spring nut.

c. Check for corrosion on leads, connections, case, tuning-slug adjustment screw, and locking spring nut.

d. Check also for broken leads; and for loose, poorly soldered, or broken mountings.

#### 6-36. CHASSIS: WIRED.

6-37. Inspect the wired chassis in the equipment according to applicable items in Table 6-2.

TABLE 6-2  
INSPECTION OF WIRED CHASSIS

| Items for Inspection                           | Procedure<br>Paragraph |
|------------------------------------------------|------------------------|
| Cables                                         | 6-30                   |
| Chassis, frames, and panels                    | 6-23                   |
| Capacitors, fixed                              | 6-32                   |
| Capacitor, variable                            | 6-34                   |
| Coils, r-f                                     | 6-42                   |
| Connectors                                     | 6-44                   |
| Fuse holder                                    | 6-46                   |
| Gears                                          | 6-19                   |
| Jacks, output                                  | 6-50                   |
| Motor, sweep                                   | 6-66                   |
| Resistors, fixed, composition                  | 6-54                   |
| Resistors, fixed, wire wound                   | 6-56                   |
| Resistors, variable                            | 6-58                   |
| Socket, crystal                                | 6-60                   |
| Sockets, electron tube                         | 6-62                   |
| Soldered terminal connections                  | 6-64                   |
| Switch, rotary                                 | 6-68                   |
| Terminal boards                                | 6-70                   |
| Transformers and reactors (iron<br>cored type) | 6-72                   |
| Tubes, electron                                | 6-74                   |

#### 6-38. CHASSIS, FRAMES, AND PANELS.

6-39. Check chassis, frames, and panels for physical damage and corrosion.

#### 6-40. FASTENERS.

6-41. Special fasteners that are not standard hardware should be inspected as follows:

a. Check captive screws for deformed screw, damaged threads, and deformed or loose guide.

b. Check Camloc fasteners for rust or corrosion and physical damage.

6-42. COILS: R-F.

6-43. Inspect r-f coils for crushed, scratched, cut, loose, corroded (verdigris), or charred windings. Check for corroded (verdigris), loose, broken, or poorly soldered leads, terminals, connections, and mountings. Inspect for physical damage to forms, tuning-slug adjustment screws, locking springs, and nuts.

6-44. CONNECTORS.

6-45. Inspect all connectors for cracked or broken insulation; and for contacts which are broken, deformed, or out of alignment. Examine also for corroded or damaged plating on contacts; and for loose, poorly soldered, broken, or corroded terminal connections.

6-46. HOLDERS: FUSE.

6-47. Inspect fuse holders for cracked or broken body or cap, and for defective locking actions.

6-48. INSULATORS.

6-49. Inspect insulators of glass or of brittle composition for cracks, chipped surface, or breakage. Where an insulator is used also as a seal, as in hermetically sealed capacitor cases, with glass or ceramic insulated terminals, look for a defective bond between glass or ceramic and metal of case. Leakage of oil or compound around insulator seal is evidence of a broken or defective bond.

6-50. JACKS, OUTPUT.

6-51. Inspect these jacks for broken or charred insulation, and for loose, poorly soldered, broken, or corroded terminal connections.

6-52. LIGHT ASSEMBLY.

6-53. Inspect light assembly for loose, cracked, or broken lens; internal darkening; corrosion of contact ring or base; and damage to insulation, base, or mounting threads.

6-54. RESISTORS: FIXED (COMPOSITION).

6-55. Inspect these resistors for cracked, broken, blistered, or charred bodies; and loose, broken, poorly soldered, or corroded terminal connections.

6-56. RESISTORS: FIXED (WIRE WOUND).

6-57. Inspect these resistors for charred, broken, or cracked insulation; loose, poorly soldered, broken or corroded terminal connections; and loose mountings.

6-58. RESISTORS: VARIABLE (POTENTIOMETERS OR RHEOSTATS).

6-59. For inspection of variable resistors, proceed as follows:

a. Inspect for corrosion of shafts, cases, and other visible parts.

b. Check for loose mountings and any physical damage.

c. Rotate shaft to determine whether action is too rough, too loose, or too tight.

d. Inspect variable resistors of the uncased wire-wound type for loose windings; broken winding; loose, corroded, or damaged contact arm; or poor contact with resistance element.

6-60. SOCKET: CRYSTAL.

6-61. Inspect crystal socket for cracked or broken insulation; and for contacts which are broken, deformed, or out of alignment. Examine also for corroded or damaged plating on contacts; and for loose, poorly soldered, broken, or corroded terminal connections.

6-62. SOCKETS: ELECTRON TUBE.

6-63. Inspect all tube sockets for loose, broken, missing, or improperly seated mounting rings and hardware; cracked or broken wafer of body; and charred or burned wafer surfaces (usually between contacts, or between contact and chassis). Check for broken, deformed, or corroded contacts; and for loose, poorly soldered, broken, or corroded terminal connections.

6-64. SOLDERED TERMINAL CONNECTIONS.

**Note**

Soldered joints are as susceptible to trouble as are many others parts of the equipment. Because of the great number of joints, thorough inspection is required to ensure normal operation and simplify trouble-shooting.

6-65. Inspect soldered connections for these defects:

a. Look for cold-soldered or rosin joints. These joints present a porous or dull rough appearance. Check for strength of bond with the point of a tool; quite often the solder can be dislodged or readily crumbled. Test any rosin-covered joint—it is likely to be a poor one.

b. Examine for excess solder, protrusions from the joint, pieces adhering to adjacent insulation, and particles or droppings of solder lodged between adjacent joints, conductors, or other parts.

c. Check for insufficient solder, such as wire at joint not entirely covered by solder. Look for loose, unsoldered strands of wire protruding from conductor at joint, and insulation stripped back too far from joint, or badly frayed at joint.

d. Check for corrosion (verdigris) on copper conductor at joint, particularly under spaghetti sleeve.

e. Try all conductors, to see whether any are partially or entirely broken off at solder joint, underneath sleeve.

6-66. SWEEP-MOTOR ASSEMBLY.

6-67. This sweep-motor assembly should be inspected as follows:

a. Examine frame and housing for physical damage.

b. Check sweep capacitor for deformation and freedom from binding.

c. Check motor for proper operation.

## 6-68. SWITCHES: ROTARY (WAFER TYPE).

6-69. For inspection of rotary switches, proceed as follows:

- Inspect wafer of body for cracks or breakage and for charring.

- Check contacts (movable and stationary) for deformities, breakage, grooving (wear), burning or pitting, and for corrosion.

- Inspect terminals for loose, poorly soldered, broken, or corroded terminal connections.

- Examine detent or other mechanical parts for physical damage or corrosion, and for irregular or rough action. Test by manually rotating over range and noting "feel" of mechanical action. Stops should be positive, and action should be smooth between stops.

## 6-70. TERMINAL BOARDS.

6-71. Inspect these boards for cracked, broken, or charred insulation; for loose, broken, poorly soldered, or corroded terminal connections; and for loose or missing mounting hardware.

## 6-72. TRANSFORMERS AND REACTORS: IRON CORED.

6-73. Inspect these transformers and reactors as listed in Table 6-3.

## 6-74. TUBES: ELECTRON.

6-75. Inspect electron-tube envelopes for cracked glass, separation from base, and obliterated markings. Look for deformed, broken, or misaligned contacts. Look for corrosion or other damage to contact plating.

## 6-76. WIRING.

6-77. Inspect open and laced wiring of chassis, terminal boards, and parts of equipment by checking insulation for physical damage and charring. Inspect all wires, in general, for breakage, and for improper dress in relation to adjacent wiring or chassis. Inspect all soldered connections for defects as directed in paragraph 6-64.

TABLE 6-3  
INSPECTION OF TRANSFORMERS AND REACTORS

| Item                                                            | Metal Cased<br>(Hermetically<br>Sealed) | Metal Cased<br>(Potted) | Uncased<br>(With<br>Terminals) | Uncased<br>(With<br>Leads) |
|-----------------------------------------------------------------|-----------------------------------------|-------------------------|--------------------------------|----------------------------|
| Case damage (holes, dents)                                      | X                                       | X                       |                                |                            |
| Terminal insulators (cracked or broken,<br>of glass or ceramic) | X                                       |                         |                                |                            |
| Coil terminals (loose, broken, or charred)                      |                                         |                         |                                | X                          |
| Terminal connections (loose, poorly sol-<br>dered, or corroded) | X                                       | X                       | X                              | X                          |
| Excessive heating (protective coating<br>melted or charred)     |                                         |                         | X                              | X                          |
| Coil winding (loose, scuffed, or broken)                        |                                         |                         | X                              | X                          |
| Mounting (loose, broken, or missing)                            | X                                       | X                       | X                              | X                          |

## SECTION VII

### REPAIR AND REPLACEMENT

#### 7-1. INTRODUCTION.

7-2. This section contains essential instructions for the repair or replacement of worn, damaged, or defective parts.

7-3. Faulty parts are usually detected by inspection in Section VI, by tests performed during reassembly in Sections VIII and IX, or by tests given in Section XI. When the faulty part is repaired or replaced, the new part should be tested as described in Section VIII, IX, or XI. Instructions for testing insulation resistance of cables and capacitors are included in this section.

7-4. After a critical part is repaired or replaced, it may be necessary to make certain readjustments. Most adjustments are described in the tests and adjustments procedure in Section XI. Section IX describes realignment and testing of components.

7-5. Repair instructions are not given for parts which cannot be economically repaired or overhauled. These are replaced as complete parts. Replacement instructions are not given where the method is obvious, and dismantling or disassembly instructions given in Section IV are not repeated in this section. Instructions for replacing special parts on assembled equipments are contained in Section III of this manual and in Sections V and VI of the Handbook of Service Instructions.

7-6. Most of the repair and replacement instructions contained in this section apply to disassembled equipment. To disassemble a component or assembly for repair or replacement, refer to Section IV.

#### Note

Modifications or changes authorized by T.O.'s, T.N.'s, or other pertinent directives, which can be more readily made on disassembled equipment, should be performed before assembly in Sections VIII and IX.

7-7. A wiring diagram should be drawn before removal of any parts requiring unsoldering of several wires. This diagram should show color coding of the wires and the approximate location of the connections. In cases where lacing is to be removed, or where the lead dress is important, appropriate details should also be shown.

7-8. Tropicalization should be retouched if it has been damaged during repair or replacement. Retropicalize small spots by applying the tropicalizing compound with a small brush.

#### 7-9. REPAIR OF CABLES.

7-10. Paragraph 6-30 describes inspection of cables for

physical damage and shorted, open, or grounded pins. New and newly repaired cables should be tested for continuity between corresponding terminals at each end of the cable. The insulation resistance between each terminal and its connector shell, and between each terminal and every other terminal of that connector, should be measured with an insulation tester, such as a Biddle Midget Megger or Interstate Type G. The insulation resistance of most cables should be at least 100 megohms. Cables for this equipment are furnished prefabricated, but for all practical purposes, the following information may be useful when constructing cables.

a. Avoid sharp bends; the minimum bending radii for all cables is approximately three inches.

b. Allow sufficient cable length so that cable plugs can easily be removed from the component. When cutting wire for cables, be sure to allow  $\frac{5}{16}$  inch at each end for stripping and tinning.

c. Do not remove any more insulation from the ends of the wires than is required to solder the wire to the terminal.

#### CAUTION

Be careful not to tin more than a  $\frac{1}{4}$ -inch section, as tinning lessens the flexibility of the conductor, and increases the possibility of breakage as a result of vibration. Do not use a corrosive flux or acid-core solder. A noncorrosive rosin-core solder must be used for tinning and soldering all connections.

d. Avoid the use of excess solder and the formation of sharp solder points on connector terminals.

e. Wrap Vinylite tape over all unshielded cable wires, to prevent damage to the wires by the connector or cable clamp.

f. All unshielded cables should be wrapped with Vinylite tape and laced with Vinylite lacing cord.

g. Be sure to test all completed cables for continuity before connecting them to the equipment.

#### 7-11. REPLACEMENT.

#### 7-12. CAPACITORS.

7-13. Even new capacitors drawn from stock are apt to have low insulation resistance, particularly paper-dielectric capacitors that have been stored under tropical conditions for a long time. Before replacing one of these capacitors, it should be tested for proper insulation resistance as described below.

7-14. The insulation resistance of a capacitor should be measured between terminals with a megohm bridge or insulation resistance tester, at a minimum potential of 100 volts

and at a maximum not to exceed the rated voltage of the capacitor. The electrification time need not exceed two minutes. For capacitors that are sealed in metal cases (the case not grounded), the insulation resistance should also be measured between each terminal and the case, and should be greater than 3000 megohms. Insulation resistance requirements for capacitors with nonmetallic cases are shown in the graph of figure 7-1, while those of metal-cased types are shown in figure 7-2. As the insulation resistance varies greatly with the temperature, it is important that the tests be made at or near normal room temperature.

#### 7-15. CRYSTAL DIODES.

7-16. Before removing a defective crystal diode, note the polarity of the crystal and the way it is inserted. Before inserting a new crystal diode, check both the forward and back resistance, as even new crystal diodes drawn from stock may be defective. If soldering is necessary, avoid applying excess heat to the crystal element.

#### 7-17. SWEEP-MOTOR ASSEMBLY.

7-18. The sweep motor in this equipment is repaired according to the procedure in paragraph 3-6.

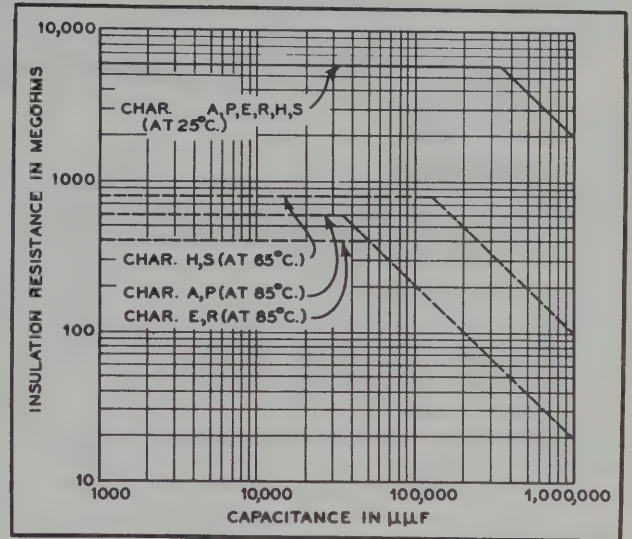


Figure 7-1. Insulation Resistance for Nonmetallic Capacitors

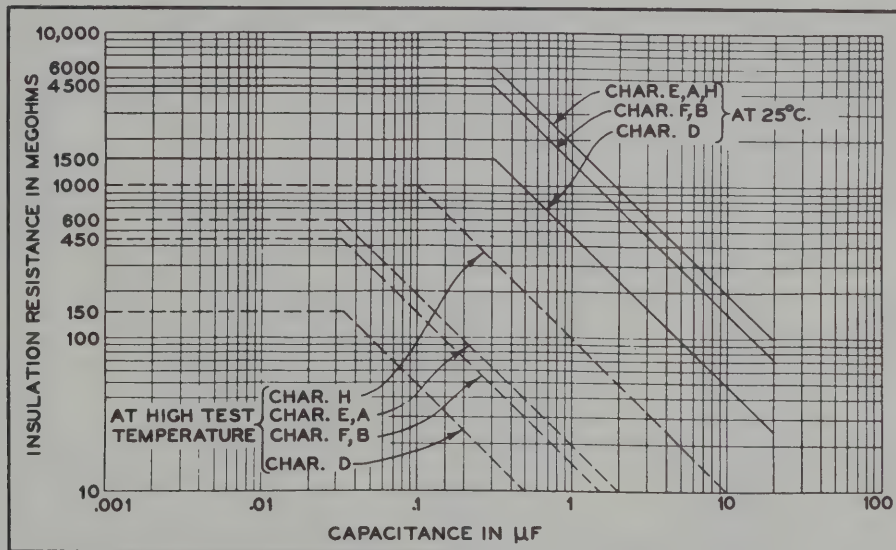


Figure 7-2. Insulation Resistance for Metallic-Cased Capacitors

## SECTION VIII

### REASSEMBLY AND TESTING OF SUBASSEMBLIES AND ASSEMBLIES

#### 8-1. INTRODUCTION.

8-2. This section contains instructions for the reassembly of parts into assemblies and subassemblies, and includes tests or checks prior to reassembly into the complete component.

8-3. References are made to exploded views in Section IV for aid in reassembly. The referenced figure and index numbers correspond to those used during disassembly.

8-4. Any lubrication, retropicalization, or installation of gaskets necessary during reassembly is specified, when applicable. A coating of Dow-Corning No. 4 compound must be applied to all machined surfaces, and an approved anti-seize compound such as JAN-A-669 must be applied to all screws before insertion into equipment.

8-5. Insofar as is possible, all electron tubes should be tested in an approved tube tester to determine suitability for reuse, with due consideration for the circuit or stage involved. In many instances, tubes will be suitable for general purposes, but, if mutual conductance is slightly low, will prove unsatisfactory in certain critical circuits.

#### 8-6. REASSEMBLY.

##### 8-7. SWEEP-CONVERTER ASSEMBLY.

8-8. To reassemble the sweep-converter assembly, refer to Table 8-1 and see figure 4-3.

##### 8-9. OUTPUT-ATTENUATOR ASSEMBLY.

8-10. To reassemble the output-attenuator assembly, refer to Table 8-2 and see figure 4-3.

TABLE 8-1  
REASSEMBLY OF SWEEP-CONVERTER ASSEMBLY

| Index No.      | Item                                                              | Procedure                                                                                                                                                                                                                                                                                                                                                      |
|----------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16<br>15<br>14 | Center partition<br>Sweep converter shield box<br>Screws (4 used) | Replace center partition (16). Resolder wire and capacitor which connect tube section of sweep converter shield box (15) with switch section, and fold shield box (15) so that the four screw holes (two on each side) coincide.<br><br><b>CAUTION</b><br><br>See figure 8-1 for correct method of folding shield box.<br>Replace screws (14) in sides of box. |

TABLE 8-2  
REASSEMBLY OF OUTPUT-ATTENUATOR ASSEMBLY

| Index No.                            | Item                                                                                                                                                               | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17<br>13<br>12<br>11<br>10<br>9<br>8 | Nut and lockwasher<br>Nut and lockwasher<br>Round-head screws (4 used)<br>Coaxial connector<br>Center partition<br>Output-attenuator shield box<br>Screws (4 used) | Place coaxial cable connector (11) in position and fasten to chassis with the four round-head screws (12). Replace nuts and lockwashers (13) and (17). Resolder copper ribbon which connects tube section of shield box to switch section. Replace center partition (10). Fold shield box (9) so that the four screw holes (two on each side) coincide.<br><br><b>CAUTION</b><br><br>See figure 8-1 for correct method of folding shield box.<br>Replace screws (8) in sides of shield box. |

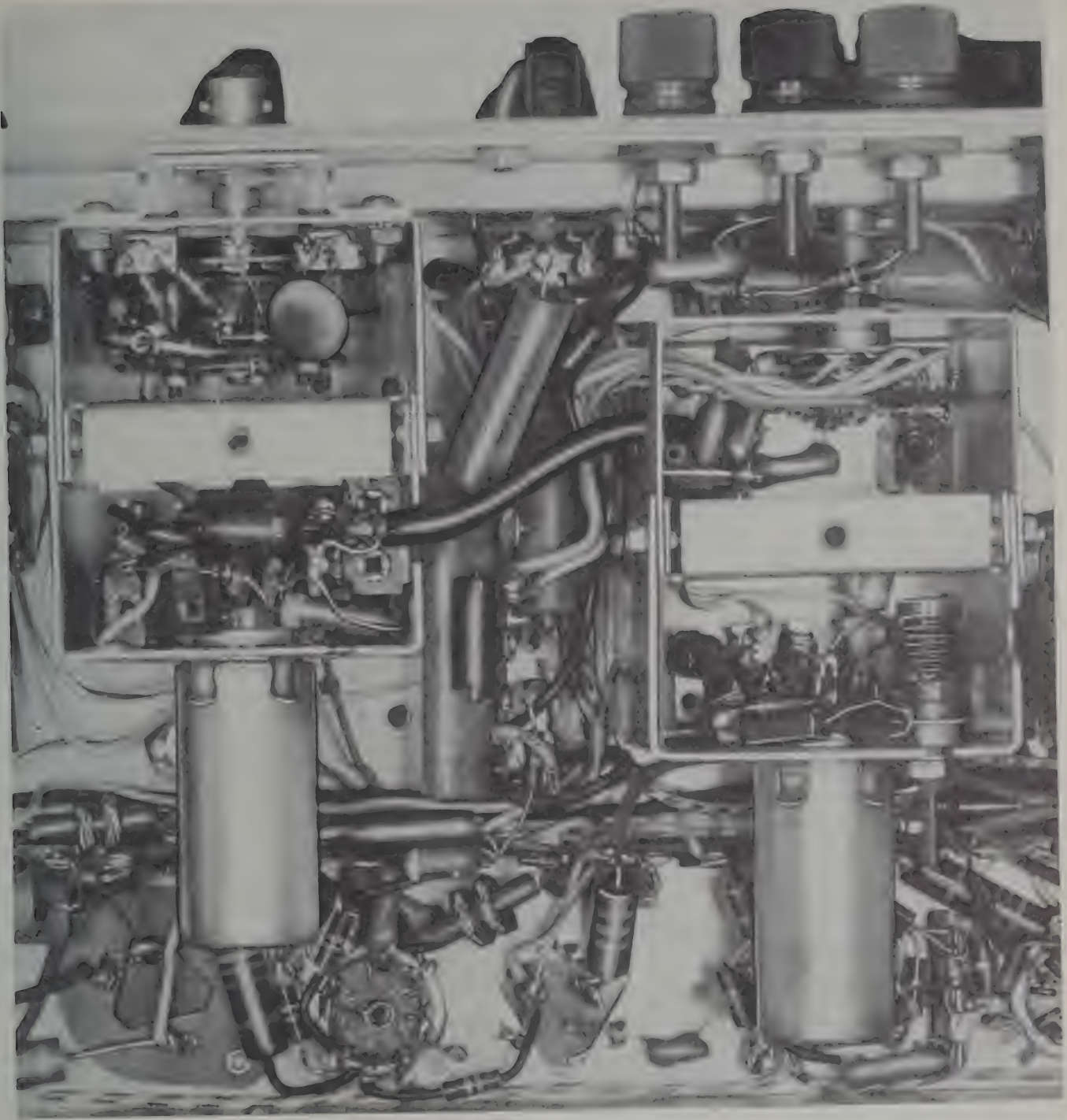


**Figure 8-1. Correct Method of Folding Shield Boxes**

**8-11. MARKER-OSCILLATOR ASSEMBLY.**

8-12. To reassemble the marker-oscillator assembly, refer to Table 8-3 and see figure 4-2.

**8-13. SWEEP-OSCILLATOR ASSEMBLY.**

8-14. To reassemble the sweep-oscillator assembly, refer to Table 8-4 and see figure 4-2.

**8-15. TESTING.**

**8-16. SWEEP-CONVERTER ASSEMBLY.**

8-17. The sweep-converter assembly is tested after it is reassembled into the component. The reassembly and testing procedure is given in paragraph 9-5.

**8-18. OUTPUT-ATTENUATOR ASSEMBLY.**

8-19. The output-attenuator assembly is tested after it is

TABLE 8-3  
REASSEMBLY OF MARKER-OSCILLATOR ASSEMBLY

| Index No. | Item                          | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55        | Screws (two used)             | Replace the two screws and nuts (53) and the one nut (54) on front of switch shaft and secure marker-tube bracket to the chassis. Replace the two screws (55) which hold padder mounting bracket to front of chassis. Position variable capacitor (51) and fasten to chassis with the three hex-head screws (52) inserted from front of chassis. Resolder the two ground connections and the two wires to variable capacitor (51). Place coil plate (50) in position around oscillator coils (49), and secure with nuts (48) inserted over threads in coil forms. Replace nuts (46) on switch pillar supports (47). |
| 54        | Nut                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 53        | Screws and nuts (two used)    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 52        | Hex-head screws (3 used)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 51        | Variable capacitor            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 50        | Coil plate                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 49        | Oscillator coils              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 48        | Nuts and lockwashers (3 used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 47        | Switch pillar supports        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 46        | Nuts (2 used)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

TABLE 8-4  
REASSEMBLY OF SWEEP-OSCILLATOR ASSEMBLY

| Index No. | Item                         | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45        | Insulating block             | Replace inductance tuner (42) in assembly, and resolder leads from capacitors to insulating block (45) on inductance tuner. Replace self-tapping screws (43) on tuner supports (44). Replace the two hex-head screws (41) in top of inductance tuner (42). Replace sweep motor (37) in assembly, and fasten securely to sweep bracket assembly (40) with the two hex-head screws (38) and lockwashers (39). Resolder the two wires (36) and the two copper ribbons (35) to sweep motor. |
| 44        | Tuner supports               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 43        | Self-tapping screws (2 used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 42        | Inductance tuner             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 41        | Hex-head screws (2 used)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 40        | Sweep bracket assembly       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 39        | Lockwashers (2 used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 38        | Hex-head screws (2 used)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 37        | Sweep motor                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 36        | Wires (2 used)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 35        | Copper ribbons (2 used)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

reassembled into the component. The reassembly and testing procedure is given in paragraph 9-7.

#### 8-20. MARKER-OSCILLATOR ASSEMBLY.

8-21. To test the marker-oscillator assembly, proceed as follows:

a. Mount dial plate on the marker-oscillator assembly by means of mounting brackets fabricated locally, as shown in figure 8-2. The brackets should be made from brass stock; however, any conducting material may be substituted.

b. Connect Oscilloscope TS-239/UP, or equivalent, and RF Signal Generator AN/URM-26, or equivalent, to reassembled marker-oscillator assembly, as shown in figure 8-3.

c. Connect 6.3 volts, ac, from external power supply to terminals of marker-oscillator assembly, as indicated in figure 8-3.

d. Connect +180 volts, dc, from external power supply, through a 1000-ohm, 1-watt resistor, to terminal of marker-oscillator assembly, as shown in figure 8-3. The negative terminal of the power supply should be grounded.

e. Fully mesh plates of variable capacitor on marker-oscillator assembly, and adjust dial pointer so that it is set on the first large index mark at left end of scale.

f. Set marker oscillator on band D, and set for a frequency at low end of band.

g. Set RF Signal Generator AN/URM-26, or equivalent, for same frequency to which marker oscillator is tuned.

h. Tune D band coil to obtain a zero beat pattern on oscilloscope.

#### Note

The bands which are tuned by the various coils and capacitors are indicated on the marker-oscillator shield.

i. Set marker generator for a frequency at the high end of the D band, and set RF Signal Generator AN/URM-26 for the same frequency to which the marker oscillator is tuned.

j. Tune D band capacitor to obtain a zero beat pattern on oscilloscope.

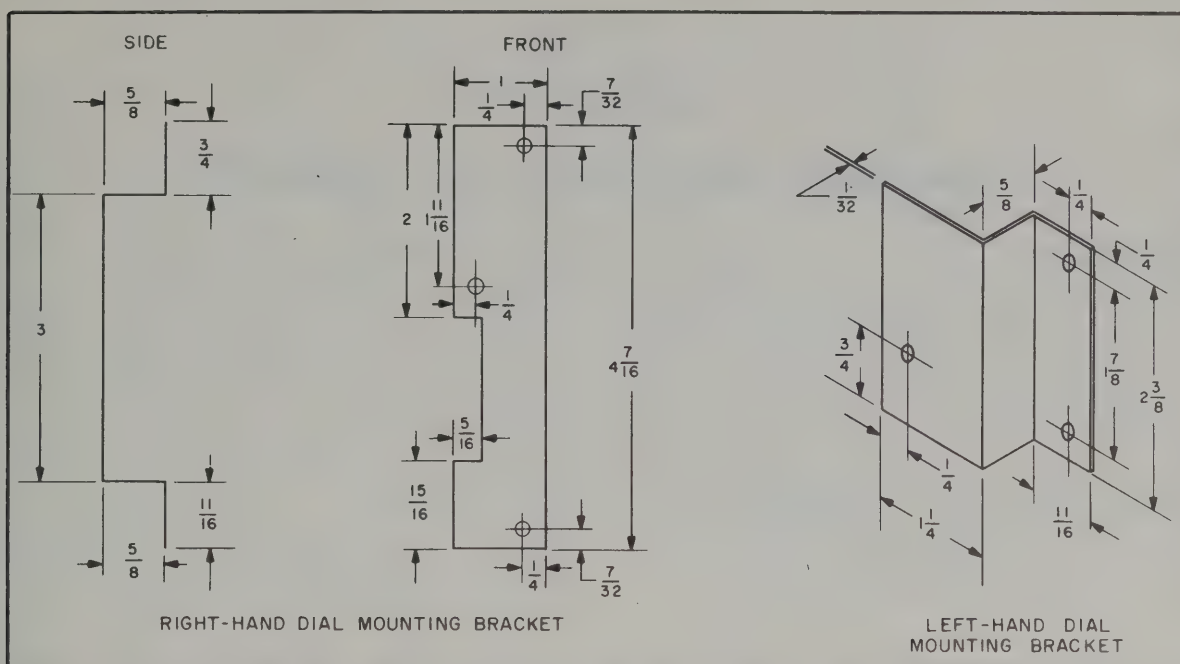


Figure 8-2. Special Brackets for Mounting Dial on Marker-Oscillator Assembly, Constructional Details

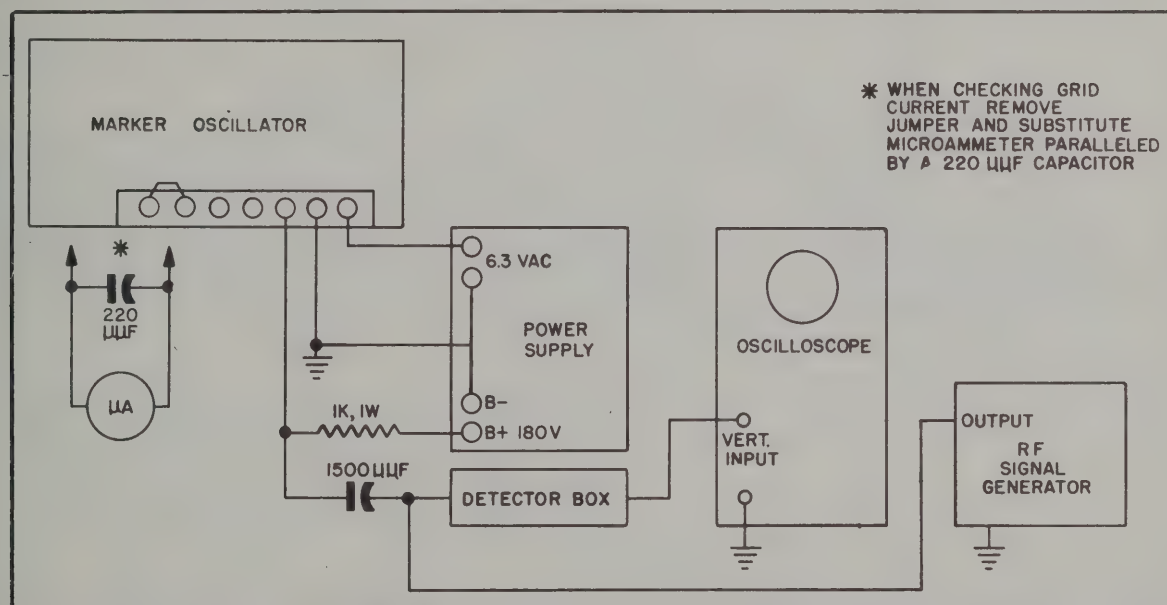


Figure 8-3. Marker-Oscillator-Assembly Test, Equipment Connection Diagram

k. Repeat steps e through i for the remaining bands.



The marker-oscillator bands must be aligned in a D, E, F, A, B, C sequence.

**Note**

The F band coil is adjusted by bending the coil in relation to the chassis.

l. After completing the alignment procedure on all

bands, measure the grid current by removing the jumper indicated in figure 8-3 and substituting a microammeter paralleled by a 220- $\mu$ f capacitor. The grid current on all bands, and throughout each band, must not be less than 60 microamperes.

m. Disconnect and remove all test equipment, and replace jumper removed in step l above.

**8-22. SWEEP-OSCILLATOR ASSEMBLY.**

8-23. The sweep-oscillator assembly is tested after it is re-assembled into the component. The reassembly and testing procedure is given in paragraph 9-11.

## SECTION IX

### REASSEMBLY AND TESTING OF COMPONENT

#### 9-1. INTRODUCTION.

9-2. This section contains instructions for reassembling assemblies into the complete component and for testing the reassembled component. Instructions for lubrication are also included, where necessary. Instructions given in the introduction to Section VIII are equally applicable in this section.

9-3. Since reassembly procedures are approximately the reverse of those for dismantling and disassembly, references are made to Section IV for figures illustrating the reassembly procedures, and the index numbers used are the same as those used during dismantling and disassembly.

#### 9-4. REASSEMBLY.

##### 9-5. SWEEP-CONVERTER ASSEMBLY.

9-6. To replace the sweep-converter assembly into the component, refer to Table 9-1 and see figure 4-3.

##### 9-7. OUTPUT-ATTENUATOR ASSEMBLY.

9-8. To replace the output-attenuator assembly into the component, refer to Table 9-2 and see figure 4-3.

##### 9-9. MARKER-OSCILLATOR ASSEMBLY.

9-10. To replace the marker-oscillator assembly into the component, refer to Table 9-3 and see figure 4-2.

TABLE 9-1  
REPLACEMENT OF SWEEP-CONVERTER ASSEMBLY

| Index No.                  | Item                                                                                                                                                                   | Procedure                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7<br>5<br>4<br>3<br>2<br>1 | Self-tapping screws (five used)<br>Sweep-converter assembly<br>Output-attenuator assembly<br>Top grounding plate<br>Retaining plate<br>Self-tapping screws (five used) | Position sweep-converter assembly (5) on chassis, and secure to chassis with the five self-tapping screws (7) inserted from top of chassis. Resolder copper ribbon going to sweep-oscillator assembly. Resolder the six wires (which leave the sweep-converter assembly) in accordance with instructions on attached tag. Resolder shielded lead going to output-attenuator assembly (4). |
|                            |                                                                                                                                                                        | <b>Note</b>                                                                                                                                                                                                                                                                                                                                                                               |
|                            |                                                                                                                                                                        | If output-attenuator assembly is already assembled to the component, replace top grounding plate (3) and fasten in position with retaining plate (2) and self-tapping screws (1). If output-attenuator assembly is not assembled to the component, perform this step after it has been assembled.                                                                                         |

TABLE 9-2  
REPLACEMENT OF OUTPUT-ATTENUATOR ASSEMBLY

| Index No.                  | Item                                                                                                                                                                   | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6<br>5<br>4<br>3<br>2<br>1 | Self-tapping screws (three used)<br>Sweep-converter assembly<br>Output-attenuator assembly<br>Top grounding plate<br>Retaining plate<br>Self-tapping screws (two used) | Position output-attenuator assembly (4) on chassis, and secure to chassis with the three self-tapping screws (6). Resolder the eight leads (which are connected to the output-attenuator assembly) (4) in accordance with instructions on attached tag. Replace top grounding plate (3) in position over output-attenuator assembly (4) and sweep-converter assembly (5), and secure with retaining plate (2) and the two self-tapping screws (1). |

TABLE 9-3  
REPLACEMENT OF MARKER-OSCILLATOR ASSEMBLY

| Index No. | Item                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34        | Marker-oscillator assembly      | Position marker-oscillator assembly (34) on chassis, and secure with the four self-tapping screws (33). Resolder the two leads in position in accordance with instructions on attached tag. Replace top marker band gear (30) and tighten the two Allen screws (31). Replace friction drive shaft (27) and pinion gear (29) assemblies, and secure with E ring (28). Replace marker gear assembly (25), rotating inner gear two teeth so as to provide tension against driving gear. Tighten the two Allen screws (24) in collar of marker gear assembly. Replace vernier scale (23) and tighten the two Allen screws (22) in vernier scale collar. Replace marker-oscillator dial plate (20), and secure to chassis with the four self-tapping screws (21). Place marker-oscillator dial pointer (18) in position, and secure to shaft with mounting screw (19). Replace marker oscillator shield (16), and secure to chassis with the 16 self-tapping screws (17). |
| 33        | Self-tapping screws (four used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 32        | Bottom marker band gear         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 31        | Allen screws (two used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 30        | Top marker band gear            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 29        | Pinion gear assembly            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 28        | E ring                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 27        | Friction drive sheet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 26        | E ring                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 25        | Marker gear assembly            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 24        | Allen screws (two used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 23        | Vernier scale                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 22        | Allen screws (two used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 21        | Self-tapping screws (four used) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 20        | Marker-oscillator dial plate    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 19        | Mounting screw                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 18        | Marker-oscillator dial pointer  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 17        | Self-tapping screws (16 used)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 16        | Marker oscillator shield        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

TABLE 9-4  
REPLACEMENT OF SWEEP-OSCILLATOR ASSEMBLY

| Index No. | Item                                  | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15        | Sweep-oscillator assembly             | Position sweep-oscillator assembly (15) on chassis, and secure in place with three self-tapping screws (14) inserted from front and two self-tapping screws (14) inserted from rear of chassis. Resolder the five leads to assembly in accordance with instructions on attached tag. Simultaneously replace pinion gear assembly (13) and friction drive-shaft assembly (11). Secure friction drive-shaft assembly with E ring (10), and secure pinion gear assembly (13) by tightening the two Allen screws (12) on collar of pinion gear assembly (13). |
| 14        | Self-tapping screws (five used)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 13        | Pinion gear assembly                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 12        | Allen screws (two used)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 11        | Friction drive-shaft assembly         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 10        | E ring                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 9         | Sweep pointer shaft and gear assembly |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 8         | E ring                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 7         | Self-tapping screws (four used)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 6         | Dial plate                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5         | Mounting screw                        | <p style="text-align: center;"><b>Note</b></p> <p>Before replacing shaft, grease bushing with MIL-G-3278 grease.</p> <p>Replace sweep pointer shaft and gear assembly (9) and secure with E ring (8). Replace sweep-oscillator dial plate (6), and secure to chassis with four self-tapping screws (7). Place sweep oscillator dial pointer (4) in position, and secure to shaft with center mounting screw (5). Replace sweep-oscillator shield (1), and secure to chassis (3) with the 14 self-tapping screws (2).</p>                                  |
| 4         | Dial pointer                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 3         | Chassis                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2         | Self-tapping screws (14 used)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1         | Sweep-oscillator shield               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**9-11. SWEEP-OSCILLATOR ASSEMBLY.**

9-12. To replace the sweep-oscillator assembly into the component, refer to Table 9-4 and see figure 4-2.

**9-13. TESTS AND ADJUSTMENTS.**

9-14. After the reassembly of Generator, Sweep AN/URM-75 has been completed, the various adjustments

necessary to ensure accurate and reliable operation of the component should be performed. These adjustments are given in Sections V and VI of the Handbook of Service Instructions for Generator, Sweep AN/URM-75. When performing these adjustments, it is essential that both the sweep generator and the test equipment used in performing the adjustments be allowed to warm up until a condition of stable operation is reached.

## SECTION X

### FINAL REASSEMBLY

10-1. Replace the five screws which hold front panel to chassis. Replace the 12 knobs on the front of the panel, slide sweep-generator chassis into cabinet, and secure in

place with nine screws inserted into the front of the cabinet and two screws inserted into the rear.

## SECTION XI

### INSPECTION AND TESTING

#### 11-1. INTRODUCTION.

11-2. This section contains instructions for inspecting and testing of newly overhauled Generator, Sweep AN/URM-75. Also included are instructions for the adjustment and alignment of the generator. Paragraph 11-4 contains brief instructions for a visual inspection to be performed after the equipment has been reassembled.

11-3. When the checks and adjustments introduced in paragraph 11-6 have been completed, and normal indications have been obtained throughout, the equipment meets the minimum performance requirements.

#### 11-4. INSPECTION.

11-5. The reassembled equipment should be visually inspected in accordance with the following procedure:

- a. Check each part for scratches, dents, and other damage which may have occurred during reassembly.
- b. See that all wiring is correct, and that all cable fittings are secure.
- c. Check to make certain that the equipment is properly secured with the necessary screws.
- d. After the adjustments have been completed, make sure that locking nuts on adjustment controls are tight.
- e. Check all repairs and replacements made during overhaul, to ensure that they are satisfactory, and that all changes and modifications to be made during overhaul have been completed.

#### Note

Marking of equipments required by Government T.O.'s or other instructions, to indicate overhaul or the incorporation of changes, should be applied during inspection and test (if not previously applied to subassemblies, assemblies, or components during overhaul and reassembly).

#### 11-6. TESTING.

11-7. Before any checks or adjustments are performed, check the power supply and the sockets for correct voltages. Table 6-4 of the Handbook of Service Instructions lists the normal plate, screen, and filament voltage for each functional circuit of the generator.

#### 11-8. ADJUSTMENTS.

11-9. Perform all the adjustments listed in Section VI of the Handbook of Service Instructions. If an abnormal indication is obtained after making an adjustment, check the appropriate circuit or circuits involved, in accordance with the procedure in Table 6-3 in the Handbook of Service Instructions.

#### 11-10. MINIMUM PERFORMANCE CHECKS.

11-11. Perform all the minimum performance checks listed in Table 6-2 in the Handbook of Service Instructions. If an abnormal indication is obtained, check the appropriate circuit or circuits involved, in accordance with the procedure in Table 6-3 of the Handbook of Service Instructions.

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